ABSTRACT OF THE DISCLOSURE

[1080] With better knowledge of the behavior of objects in a running application, it is possible to improve execution environment decisions that affect management of such objects. For example, if available, object lifetime statistics could be employed in decisions that affect how and where objects are placed, e.g., on allocation or during operation of automatic dynamic memory management facilities such as a garbage collector. Typically, instrumenting all objects to sample lifetimes or other characteristics would impose an impractical level of overhead. We present a technique for dynamic sampling of a subset of allocated objects that incurs low runtime overheads. Coupled with automatic memory management or collection facilities, this technique allows us to improve the efficiency of a collector by segregating objects, sampled and non-sampled alike, based on observed characteristics such as object lifetime. The sampling techniques facilitate tracking of many kinds of object information. For purposes of illustration, an exemplary implementation is described in which such sampling techniques are exploited to improve performance of generational garbage collectors.